

Mexican Wolf Blue Range Reintroduction Project
Interagency Field Team Annual Report
Reporting Period: January 1 – December 31, 2004

Prepared by:

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Cooperators:

U.S. Fish and Wildlife Service (USFWS)
Arizona Game and Fish Department (AGFD)
New Mexico Department of Game and Fish (NMDGF)
U.S.D.A. Wildlife Service (USDA-WS)
U.S. Forest Service (USFS)
White Mountain Apache Tribe (WMAT)
Turner Endangered Species Fund (TESF)
Defenders of Wildlife (DOW)

Introduction

Herein, we report the progress of field efforts during 2004 to reestablish Mexican wolves (*Canis lupus baileyi*) into the Blue Range Wolf Recovery Area (BRWRA), (Fig. 1). In 2000, the White Mountain Apache Tribe (WMAT) agreed to allow wolves to inhabit Fort Apache Indian Reservation (FAIR) lands, adding approximately 2,440 square miles (mi²) to the Recovery Area. In 2002, the WMAT signed on as a primary cooperator, providing the potential for wolves to be directly released on tribal lands. The recovery area encompasses approximately 9,290 mi², composed of the Apache-Sitgreaves National Forests (A-SNF) and the Fort Apache Indian Reservation (FAIR) in east-central Arizona and the Gila National Forest (GNF) in west-central New Mexico. In January 1998, the first Mexican wolves were released into the Alpine District of the A-SNF of Arizona. At the end of 2004, a minimum of 44 to 48 wolves in 11 packs or groups could be confirmed inhabiting areas of Arizona and New Mexico. Four wolves confirmed in 2003 were categorized as “Unknown Status” at the end of 2004 because their free-ranging existence (or deaths) could not be documented.

Abbreviations used in this document:

Wolf age and sex:

A = alpha
M = adult male (> 2 years old)
F = adult female (> 2 years old)
m = subadult male (1-2 years old)
f = subadult female (1-2 years old)
mp = male pup (< 1 year old)
fp = female pup (< 1 year old)

Methods

The following methods section is primarily taken from previous Mexican wolf annual reports (USFWS Mexican Wolf Annual Reports 1998-2003). For purposes of the Reintroduction Project, a wolf “pack” is defined as ≥ 2 wolves that maintain an established territory and are proven breeders. In the event that one of the two alpha wolves dies, the pack status or name is retained by the remaining alpha wolf, regardless of pack size. A “group” of wolves is defined as ≥ 2 wolves that travel together, but neither wolf is a proven breeder. “Releases” are defined as wolves being released directly from captivity, with no previous free-ranging experience, into the Primary Recovery Zone. “Translocations” are defined as a Project activity where free-ranging wolves are captured and moved to a location away from the site of capture. This includes captured free-ranging wolves that have been temporarily placed in captivity.

Release candidate wolves were acclimated prior to release in USFWS approved facilities where contact between wolves and humans was minimized and carcasses of road-killed native prey species (mostly deer and elk) supplemented their routine diet of processed canine food. These facilities included the Ladder Ranch Wolf Management Facility managed by the TESH (Ladder Ranch), the Sevilleta Wolf Management Facility managed by the USFWS at Sevilleta National Wildlife Refuge (Sevilleta), and Wolf Haven International (Wolf Haven). Sevilleta and Ladder Ranch are in New Mexico and Wolf Haven is in Washington. Genetically and socially compatible breeding pairs were established and evaluated for physical, reproductive, and behavioral suitability for direct release into the wild. Some pairs produced pups in captivity before release, and their pups and occasionally yearlings were included in the release group.

Adult wolves selected for release were radio-collared and given complete physical examinations prior to being moved to release locations. Caretaker camps were established approximately 0.5 mi from pen sites. Carcasses of native prey and fresh water were provided as needed. When necessary, security was maintained by posted USFS closures of areas within approximately 0.5 mi of each pen.

Releases and translocations of wolf packs in 2004 used nylon mesh acclimation pens approximately 0.33 acres in size, with electric fencing interwoven into the structure. Flagging was also attached to the pen walls approximately every 2 feet, as a deterrent to wolves running into the pen walls. The only release of a new pack in 2004 occurred at the Long Cienega site (Fig. 2), on the A-SNF in Arizona. The two pack translocations in 2004 both occurred at the McKenna Park site (Fig. 2), on the GNF in New Mexico.

All released or translocated wolves were provided with supplemental road-killed elk and deer, or occasionally commercially produced “meat logs” for wild carnivores after release. The duration of supplemental feeding varied, depending on time of year, availability of vulnerable prey, and whether pups were present. Supplemental feeding was gradually discontinued when wolves began killing prey.

Monitoring was most intensive during the initial weeks after release, to determine when wolves began hunting. All radio-collared wolves were monitored using standard radio telemetry

techniques from the ground and once or twice weekly from the air. Visual observations and fresh sign were also noted. Location data were entered into the project's Access database for analysis.

Aerial locations of wolves were used to develop home ranges for the habitat selection portion of this study (White and Garrott 1990). We based home range polygons on 1 year (January-December) of locations evenly distributed across summer and winter seasons for wolves from a given pack (Mladenoff et al. 1995, Wydeven et al. 1995). To maximize sample independence, individual locations were only recognized for radio-marked wolves that were either spatially or temporally separated from other radio-marked pack members; this approach limited potential pseudoreplication of locations. Wolf home range size reaches an asymptote at around 30 locations, so increasing the number of locations beyond this level has little effect (Carbyn 1983, Fuller and Snow 1988). Alternatively, some authors have suggested that in recolonizing wolf populations, a larger number of locations may be required for home range size to reach its asymptote (e.g. >79 locations, Fritts and Mech 1981).

Recognizing that some wolf packs in BRWRA are in remote locations and thus are not monitored intensively, we elected to use ≥ 30 locations per year as a threshold of retention in our database. To account for this potential sampling bias, we used the fixed kernel method to estimate wolf home ranges due to its low bias when sample sizes are small (Kernohan et al. 2001). In contrast, previous wolf home range analysis has relied largely on the unstable minimum convex polygon (MCP) method (e.g. Fritts and Mech 1981, Carbyn 1983, Fuller and Snow 1988, Burch 2001). Fixed kernel home ranges derived from smaller sample sizes typically yield slightly larger home range size estimates than other estimates which are more dependant upon increased sample size to develop accurate home ranges (Seaman et al. 1999, Powell 2000, Kernohan et al. 2001). Home range polygons were generated at the 95% level to represent home range use areas by wolves (White and Garrott 1990), using the fixed kernel method (Worton 1989) with least-squares cross-validation (LSCV) as the smoothing option in the animal movement extension in the program ArcView (Hooge et al. 1999; ESRI, Redlands, CA, USA). Occupied Mexican wolf range was defined by the 95% MCP method using the packs above, as well as 5 mi buffers around wolves traveling alone or packs that had less than 20 locations per the final rule (USFWS 1998).

Project personnel investigated wolf-killed ungulates as they were discovered, analyzing the carcasses to determine sex, age, health, and whether or not the carcass was scavenged or was an actual wolf kill. In addition, the Project conducted intensive winter monitoring of 4 packs over a 3-week period during March to determine the health and type of prey consumed and to document minimum kill rates. Intensive winter monitoring involved acquiring daily locations of the 4 packs via aerial telemetry to pinpoint kills and observe wolf numbers. Ground crews then examined kill sites to verify the type of species and determine the health and cause of death when evidence was present. USDA-WS wolf specialists investigated suspected wolf depredations on livestock as soon as the reports were received, most often within 24 hrs. Results of all investigations were reported to the cooperators and to DOW, a non-profit organization that can compensate livestock owners for wolf depredations. Unfortunately, not all dead livestock are found, or found in time to document the cause of death. Thus, depredation levels in this report represent the minimum number of livestock killed by wolves.

If wolves localized near areas of human activity or were found feeding on, chasing, or killing cattle, they were hazed by chasing on foot, horseback, or all-terrain vehicles. When necessary, rubber bullets, cracker shells, radio-activated guard (RAG) boxes and other pyrotechnics were used to encourage a flight response to humans and discourage the nuisance behavior that the wolves were displaying. When wolves did not respond to aversive conditioning attempts, they were captured and removed from the wild or translocated into other areas within the Recovery Area. Capturing primarily occurred through the use of leghold traps, however occasionally conditions required the use of helicopters. In addition, wolves that localized outside the BRWRA were captured and brought back into the BRWRA, per the final rule (USFWS 1998). Monitoring was enhanced by increasing the number of radio-collared wolves, identifying and marking unknown wolves, and inspecting the health and condition of wolves in the wild.

Project personnel conducted outreach activities on a regular basis, as a means of disseminating information from the field team to stakeholders, concerned citizens, and government and non-government organizations. This was facilitated through monthly updates, field contacts, handouts, informational display booths and formal presentations.

Information from the FAIR is not included in this report, in accordance with an agreement with the WMAT.

Results

Population status

At the end of 2004, there were 23 radio-collared wolves (16 adults or sub-adults and 7 pups) and approximately 11-13 known uncollared adult/sub-adult wolves and 10-12 uncollared pups free ranging within the BRWRA. Confirmation of uncollared wolves was achieved via visual observation, howling, and tracks (Table 1), (Fig. 3). The population consisted of 11 packs or groups (7 in Arizona and 4 in New Mexico), and 2 lone collared wolves. Furthermore, the status of 4 previously known wolves could not be confirmed as of December 31, 2004, because their free-ranging existence (or deaths) could not be documented. These "status unknown" wolves included M794, M832, AF624, and AM619. Four additional individuals including Francisco II AM904, Saddle AM732, San Mateo AM796, and Aspen mp871 prematurely dropped or lost radio collars during 2004; however, evidence suggests they were still alive as of December 31, 2004.

In 2004, 6 packs (Hawks Nest, Cienega, Rim, Iris, Bluestem, Francisco II) produced wild-conceived, wild-born litters. This marks the third year wild born wolves have themselves bred and raised pups in the wild. In addition, five pairs formed naturally in 2004: (1) the Rim Pack resulted from the pairing of F858 (wild born Cienega female) and an unknown wild-born male, (2) Francisco II Pack resulted from the pairing of F511 and wild-born Luna male (M904), (3) the Iris Pack resulted from the pairing of M798 (a wild-born Francisco pup) and an unknown wild-born female, (4) the Cienega Pack resulted from the pairing AF487 and an unknown wild-born

male, and (5) the San Mateo group resulted from the pairing of AM796 (a wild-born Cienega male) and AF903 (possibly a wild-born Gapiwi Pack female). All 5 of these naturally formed packs or groups are suspected to have produced pups in 2004. However, only 3 of the packs are thought to have successfully raised pups (Rim-2 pups raised, Francisco II-2 pups raised, and the Cienega Pack-3 pups raised). The San Mateo and Iris groups were documented as pregnant, and producing one pup, respectively. However, the 1 pup documented with Iris was not documented after July, and the San Mateo group pups are thought to have died shortly after whelping, based on visual inspection of the alpha female.

Table 1. Status of Mexican wolf packs present in 2004, as of 12/31/04.

Pack/Group	Wolf ID	Reproduction^a	No. of Collared Wolves	Min Pack Size^b
Hawks Nest	AF486, AM619 ^c	2	1	3 ^d
Cienega*	AF487	3	1	5 (4-5 uncollared)
Saddle*	AM732 ^c , AF797, mp860, fp861, fp862, mp863, mp864	5	6	7 (1 uncollared)
Bluestem*	AF521, AM507	5	2	6 ^e (4-7 uncollared)
Hon Dah	AM578	0	1	3 (2 uncollared)
729/799	AM729/AF799	0	0	0 ^f
Francisco II ^f *	AF511, AM904 ^c , m919	2	2	4 (2 uncollared)
Luna	AF562, AM583	0	2	2
Iris	AM798	1	1	2 ^g (1 uncollared)
Aspen*	AM512, AF667, mp871 ^c , fp872, fp873	3	3	4 (1 uncollared)
San Mateo	AF903, AM796 ^c	0	1	2 (1 uncollared)
Rim*	AF858	2	1	4 (3 uncollared)
Bonito Creek	AF587 ^h , M794 ^c	0	0	0 ⁱ
Gapiwi	AF 624 ^c	0	0	0 ⁱ
Single wolves	M795, M859, M832 ^c	NA	2	2
Totals		22	23	44

^a Reproduction – maximum number of pups documented in 2004

^b Min. Pack Size – total number of wolves (collared, uncollared, pups) documented at year end.

^c Radio collar malfunction or otherwise lost during 2004.

^d The Hawks Nest Pack at the end of the year consisted of either the Alpha female and 2 uncollared pups, or 1 pup and the Alpha male and the Alpha female.

^e The Bluestem Pack consisted of 2 collared adults, 2 uncollared sub-adults, and 5 pups in early July. However, a flight in December documented only 6 wolves. The status of the other 3 uncollared animals and whether they were the uncollared sub-adults or pups is unknown.

^f Francisco II – modified pack name due to translocation from their original home range.

^g The pup from the Iris Pack died or dispersed prior to the end of the year.

^h Died during 2004.

ⁱ Pack considered defunct due to lost collars, dispersal, removal or death.

*A Pack that meets the definition of a Breeding Pair per the Final Rule.

Releases and Translocations

In 2004, 1 new wolf pack was released into the Primary Recovery Zone, in the A-SNF of Arizona (Table 2)(Fig. 2). On July 24, 2004, the 5 members of the Aspen Pack were released into the Long Cienega soft pen on the Alpine Ranger District. The pack was held in the pen for four days and then released into the wild on July 28, 2004. However, in response to persistent usage of occupied sections of the Blue River corridor, trapping was initiated for three members of the Aspen Pack (AM512, AF667, and fp872) on December 9, 2004. Female pup 872 was captured on December 22, 2004 and transported to Ladder Ranch. As of year's end, the remaining members of the Aspen Pack remained in the wild.

One pack was translocated from captivity into the GNF (Table 3). On August 17, 2004, the Saddle Pack was translocated from captivity to the McKenna Park pen site. The pack consisted of AF797, her 5 pups (conceived in wild, born in captivity) and surrogate father AM732. The pack self-released from the pen that night, and subsequently moved to the Miller Springs/Little Turkey Park area of the Gila Wilderness.

The San Mateo group (AM796 and AF903) was also translocated from the San Mateo Mountains (outside the current boundary) to the GNF (Table 3). AF903 and AM796 had been captured in the San Mateo Mountains on August 11 and August 22, 2004, respectively. The pair was subsequently translocated to the GNF, and on September 29, 2004, they self-released from the McKenna Park pen. By mid-November, the pair had traveled approximately 30 miles returning to the San Mateo Mountains where they persisted until year's end.

In addition, the pair M729 and F799 was removed from the wild during March 2004 in response to two confirmed depredation events. AF799 was in the late stages of pregnancy upon arrival at the Sevilleta captive holding facility, therefore, any translocation was to occur after the birth of pups. Unfortunately, none of the 6 pups whelped survived. At year's end both F799 and M729 remained in captivity, with a re-release possibly occurring in 2005.

Table 2. Mexican wolves released from captivity without any prior history in the wild during January 1- December 31, 2004.

Pack/Group	Wolf #s	Release Site	Release Date	Acclimation Facility
Aspen	AM512, AF667, mp871, fp872, fp873	Long Cienega, AZ	07/24/04	Ladder Ranch

Table 3. Mexican wolves translocated from captivity or the wild during January 1 – December 31, 2003.

Pack/Group	Wolf	Release Site	Release Date	Reason for Translocation
Saddle	AM732, AF797, mp860, fp861, fp862, mp863, mp864	McKenna Park, NM	8/17/04	Augment wolf population in unoccupied New Mexico portions of the BRWRA
San Mateo	AM796, AF903	McKenna Park, NM	9/29/04	Return to within boundaries of BRWRA

Home Ranges and Movements

Most wolves exhibited normal home range use, but 2 sub-adult wolves (M795 and M859) exhibited typical dispersal behavior. Home ranges for wolves with 20 or more aerial locations were plotted for 10 packs (Fig. 5). Home range sizes were calculated using the 95% MCP and fixed kernel (FK) methods and revealed a range from 85 to 479 mi² (221 to 1,241 km²) with an average home range of 190 mi² (MCP) to 268 mi² (FK) (492 to 694 km²). Known locations of all wolves were also plotted with a 5 mi buffer to generate an occupied Mexican wolf range (Fig 6). Mexican wolves occupied 6,083 mi² (15,755 km²) of the BWRA during 2004. In comparison, Mexican wolves occupied 5,138 mi² (13,307 km²) of the BWRA during 2003.

Table 5. Home range sizes of free-ranging Mexican wolves in Arizona and New Mexico January 1 – December 31, 2004.

Pack/Group	Home Range Size Min. Convex Polygon mi ²	Home Range Size Fixed Kernel mi ²	No. of Aerial Locations
Aspen	85	140	20
Bluestem	141	140	45
Cienega	143	143	57
Hawks Nest	106	182	60
Iris	256	479	51
Rim	347	425	50
Hon-Dah	92	237	43
Francisco	231	304	46
Luna	204	237	47
795	1104	1408	35
859	1168	2487	50
San Mateo	296	393	33
Saddle	Less than 20 locations		

Mortality

Since 1998, 41 wolf mortalities have been documented, 4 of which occurred in 2004 (Table 4). This should be considered a minimum estimate of mortalities since pups and uncollared wolves can die and not be documented by project personnel.

Table 4. Mexican wolf mortalities documented during January 1 – December 31, 2003.

Wolf ID	Pack	Age	Date Found	Cause of Death
F800	Francisco	2	1/22/04	Illegal shooting
M823	Hon-Dah	1	5/19/04	Vehicle collision
AM574	Saddle	6	7/11/04	Lethal control
AF587	Bonito Creek	5	1/16/04	Other predators

Wolf Predation

In 2004, the Project conducted intensive aerial winter monitoring of Cienega Pack, Hawks Nest Pack and single wolf M859 to determine predator/prey relationships and kill rates. During the 3-week period from March 1 to March 22, 2004, 12 kills were documented. Of the 12 kills observed, 83.3 % were elk (n=10) and 16.7% were domestic cattle (n=2). Sex and age determinations of the elk kills revealed 60% as calves (n=6), 30% cows (n= 3), and 10% bulls (n=1). The 2 domestic cattle depredations observed in the study were both calves and attributed to the Saddle Pack. Outside the winter study, wolves were documented feeding on 9 additional elk and 1 mule deer in 2004. Kill-site investigations revealed wolves were likely responsible for 44% of these kills (n=4) and were likely scavenging 56% (n=5) of the kills including the mule deer.

Wolf Depredation

The 1998 Final Environmental Impact Statement (FEIS) predicted 1-34 cattle depredations per year when the Mexican wolf population reaches about 100 wolves. This represents < 0.05% of all cattle present on the range, which is only a fraction of the impact that other predators have on ranching within the Southwest (USFWS 1996).

During 2004, 8 depredations were confirmed, with no probable or possible depredations reported by USDA-WS (Table 6). This is consistent with depredation levels predicted by the FEIS for a wolf population of this size. However, this should only be considered a minimum estimate as some depredations undoubtedly go undocumented. During 2004, DOW paid \$5,085 to livestock producers for confirmed losses due to wolves.

Table 6. Wolf depredations documented during January 1 – December 31, 2003.

	Confirmed Depredation	Probable Depredation	Possible Depredation
Fatality	8 calves	0	0
Injury	6 dogs	0	0

In 2004, USDA-WS in conjunction with the other primary co-operators in the Mexican wolf reintroduction continued a research study in Arizona to assess domestic cattle mortality in an area of sympatric carnivores (Mexican wolves, lions, bears and coyotes). 2004 represents the second year of a proposed five-year carnivore study with the ultimate goal of identifying methods for reducing livestock mortality and producing data that can be used to develop fair compensation programs.

Management Actions

Capture of wolves is a necessary management action that occurs annually to enhance the Project's monitoring capabilities, as well as to remove problem wolves that have localized outside the BRWRA, on private land or on the San Carlos Apache Reservation (SCAR). These actions are authorized under the Special Rule for the Nonessential Experimental population.

In 2004, 9 wolves were trapped and/or removed from the wild. Two wolves (AM904 and mp919) were captured, collared, processed, and released on site for routine monitoring purposes. Two wolves (AF796 and AM903) were trapped principally for persisting outside the BRWRA; however, they were also involved in a depredation. Three additional wolves (AF797, AF799, and AM729) were captured and removed to captivity after confirmed involvement in depredations. AF797 was later released as part of the Saddle Pack; however, AF799 and AM729 remained in captivity at year's end. An additional wolf (AM574) was lethally removed for repeated depredations, when trapping efforts proved unsuccessful. One wolf pup (fp872) was trapped and placed in captivity for nuisance behavior. While slated for re-release, fp872 remained in captivity at year's end.

Table 7. Mexican wolves captured during January 1 – December 31, 2004

Pack/Group	Wolf ID	Capture Date	Reason for Capture
Saddle	AF797	3/24/04	Confirmed cattle depredation; outside of BRWRA; returned to captivity
Saddle	AM574	7/11/04	Confirmed cattle depredation; lethally removed after trapping efforts proved unsuccessful
729/799	AM729	3/22/04	Confirmed cattle depredation; returned to captivity
729/799	AF799	04/18/04	Confirmed cattle depredation; returned to captivity
Francisco II	AM904	10/20/04	Routine monitoring; collared/processed; released on site (GNF)
Francisco II	mp919	10/21/04	Routine monitoring; collared/processed; released on site (GNF)
San Mateo	AM796	08/22/04	Outside of BRWRA with confirmed cattle depredation; returned to captivity
San Mateo	AF903	08/11/04	Outside of BRWRA with confirmed cattle depredation; returned to captivity
Aspen	fp872	12/22/04	Nuisance behavior; removed to captivity

Outreach

During 2004, Project updates were posted locally once a month in Alpine, Nutrioso, Eagar, and Springerville in places such as USFS offices, US post offices, libraries, as well as on the USFWS Mexican wolf web site at <http://mexicanwolf.fws.gov>. Interested parties could also sign up to receive the update electronically by visiting the AGFD website at <http://azgfd.gov>. Monthly project updates were emailed and faxed from the Alpine Field Office to numerous stakeholders and interested citizens.

AGFD developed a new informational flyer that was sent to all 3,761 elk and deer permit holders in Units 1 and 27 in Arizona. The flyer provided tips on identifying wolves and coyotes to avoid mistaken targets, as well as other information to reduce encounters and conflicts with wolves and other wildlife while hunting or recreating in the wolf recovery area.

Project personnel intensively contacted campers, hunters, and other members of the public using the Mexican wolf Recovery Area, providing them with information about the Project. These contacts served to advise hunters of the potential for encountering wolves, provided general recommendations for camping and hunting in wolf-occupied areas, and explained the legal provisions of the non-essential experimental population rule.

Intensive efforts were made at posting the USFWS reward posters at all available trailheads, USFS kiosks and local business in the wolf recovery area. Additional “Wolf Country” posters and metal signs were also placed throughout the A-SNF and part of the GNF, to provide information on how to avoid conflicts with wolves. During 2004, 32 new metal “Wolf Country” signs were erected for a total of approximately 60 within the BRWRA.

Project personnel gave 44 presentations and status reports to over 9,173 people in federal and state agencies, conservation groups, rural communities, guide/outfitter organizations, livestock associates, schools, fairs, and various other public and private institutions throughout Arizona and New Mexico.

If you are interested in receiving a wolf presentation, please contact us at Shawna_Nelson@fws.gov or (928) 339-4329 to schedule a program.

Summary

At the end of 2004, a minimum of 44 to 48 wolves in 11 packs or groups could be confirmed inhabiting areas of Arizona and New Mexico. These included 23 radio-collared wolves (16 adults or sub-adults and 7 pups) and approximately 11-13 uncollared adult/sub-adult wolves and 10-12 uncollared pups. Four previously radio-collared wolves were categorized as “Unknown Status” at the end of 2004 because their free-ranging existence (or deaths) could not be documented. There could be other undocumented free-ranging wolves whose radio-collars have failed or that were never radio-collared. However, undocumented wolves are most likely loners, as wolf packs usually leave more sign and are easier to locate.

2004 marked the third year that wild-born wolves bred and produced a litter of pups. In addition, due to the current number of dispersing adult and sub-adult wolves present in the wild, there is the possibility for several packs to naturally form in 2005 and for wild wolves to continue to be recruited into the breeding population.

Since the inception of the Project in 1998, 41 wolf mortalities have been documented in the wild, 4 of which occurred in 2004. Wolves are still feeding primarily on elk. However, during 2004 there were also 8 confirmed cattle depredations. In addition, 6 dogs were confirmed to have been injured by wolves. However, this level of depredation is consistent with predictions in the FEIS for a wolf population of this size.

In 2004, one wolf was removed from the SCAR and joined with another pack that was translocated to the GNF. Four wolves were removed from the population for depredating, nuisance behavior or being localized near residential areas. Three of the depredating wolves were placed in captivity and 1 was lethally removed. Two additional wolves were removed and translocated to the GNF, primarily for persisting outside the BRWRA boundary. Two wolves were captured, radio-collared, and released on site for routine monitoring. During 2004, 1 pair with 1 pup was aversively conditioned with pyrotechnics and/or rubber bullets and RAG boxes.

Informational direct mailings were sent to 3,761 hunters who drew permits to hunt big game in the Arizona portion of the BRWRA. Project personnel provided monthly updates, maintained project web sites, regularly contacted campers, hunters, and other recreationists, and gave 44 presentations and status reports to more than 9,173 people in an attempt to keep the public, government agencies, and non-government organizations informed about the program.

Discussion

Overall, progress in the field went as expected and outlined in the FEIS. Packs continued to form naturally on their own in the wild. For the third consecutive year, a wild-born wolf reproduced successfully in the wild, with 5 wolves doing so in 2004. Compared to previous years, more wolves conceived and gave birth to pups in the wild, with a significant number surviving into their first year. Known wolf mortality was low during 2004 compared to previous years. Project personnel continued to respond and resolve major conflicts with livestock and nuisance wolves. Responsive management of depredating wolves should reduce the overall amount of depredation and prevent wolves in the future from becoming habituated to livestock. Continuation of existing procedures is recommended.

Mexican Wolf Blue Range Wolf Recovery Area

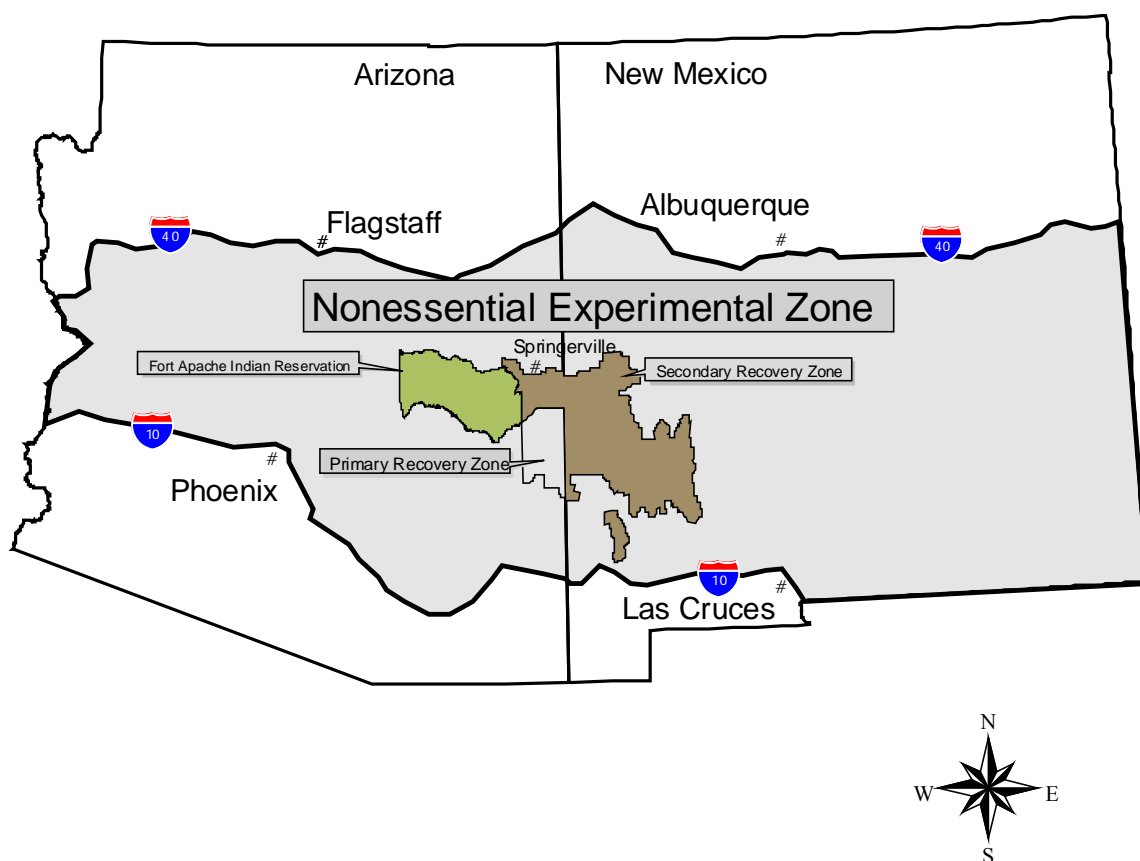


Figure 1. The Mexican Wolf Blue Range Wolf Recovery Area in Arizona and New Mexico.

Blue Range Wolf Recovery Area 2004 Release Sites

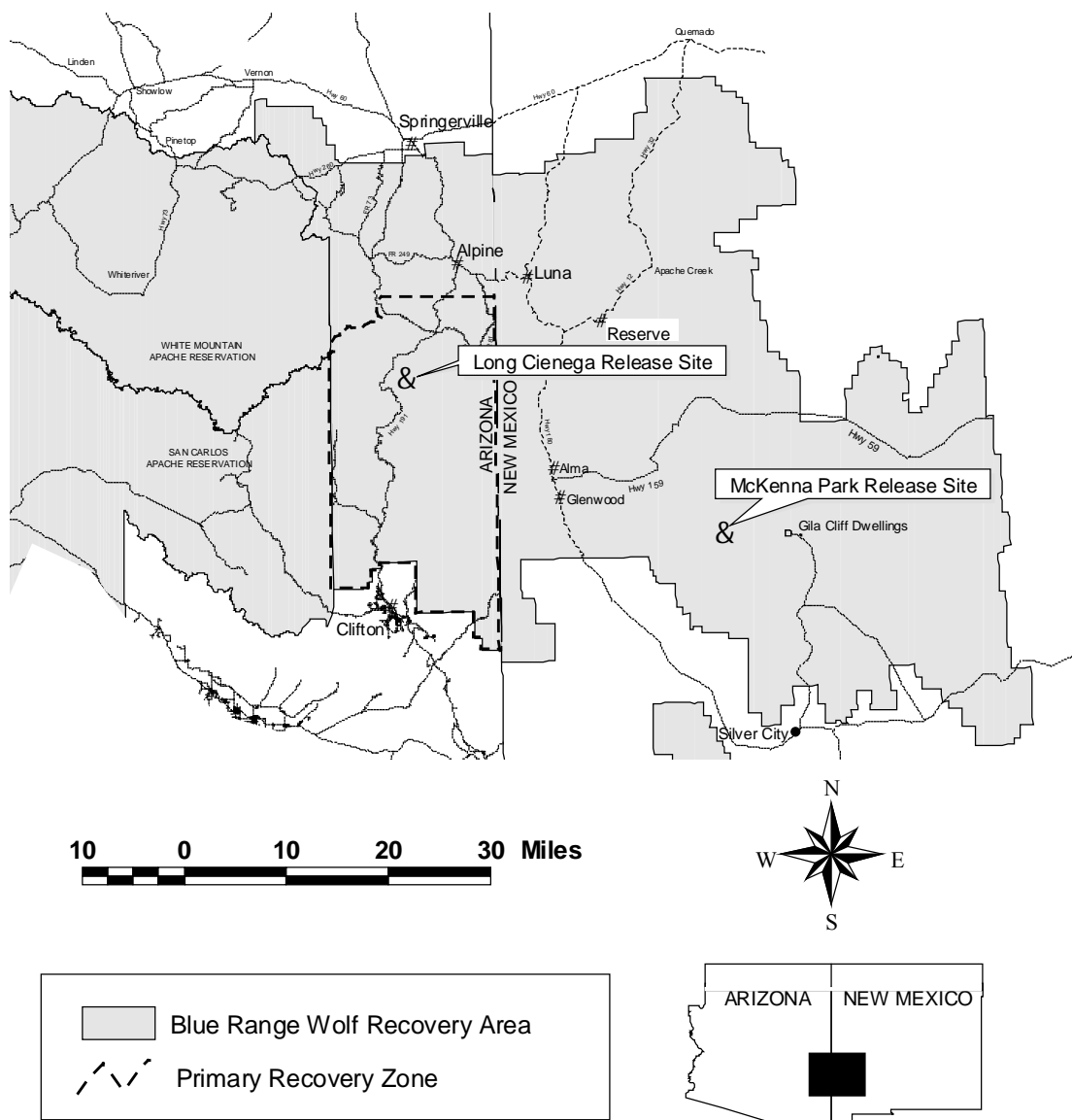


Figure 2. Mexican wolf release sites within the Blue Range Wolf Recovery Area in 2004.

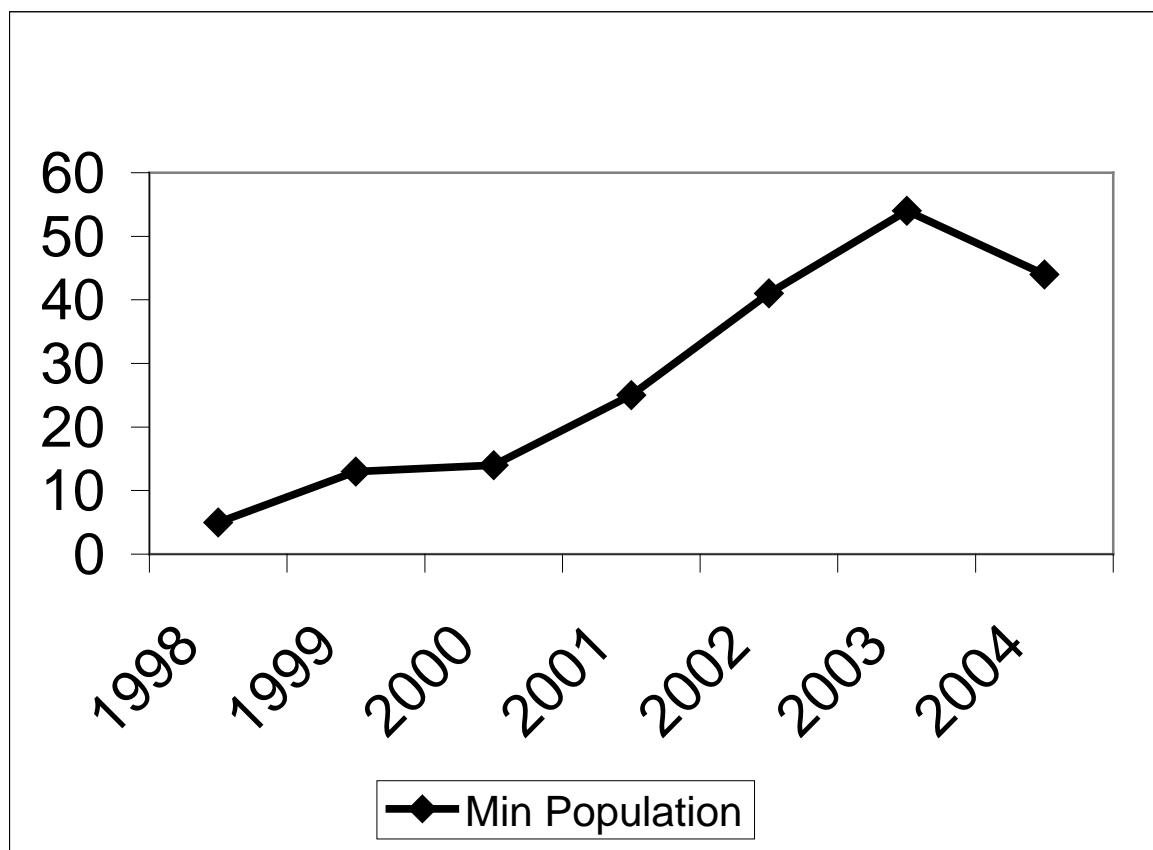


Figure 3. Mexican wolf minimum population estimates from 1998 — 2004.

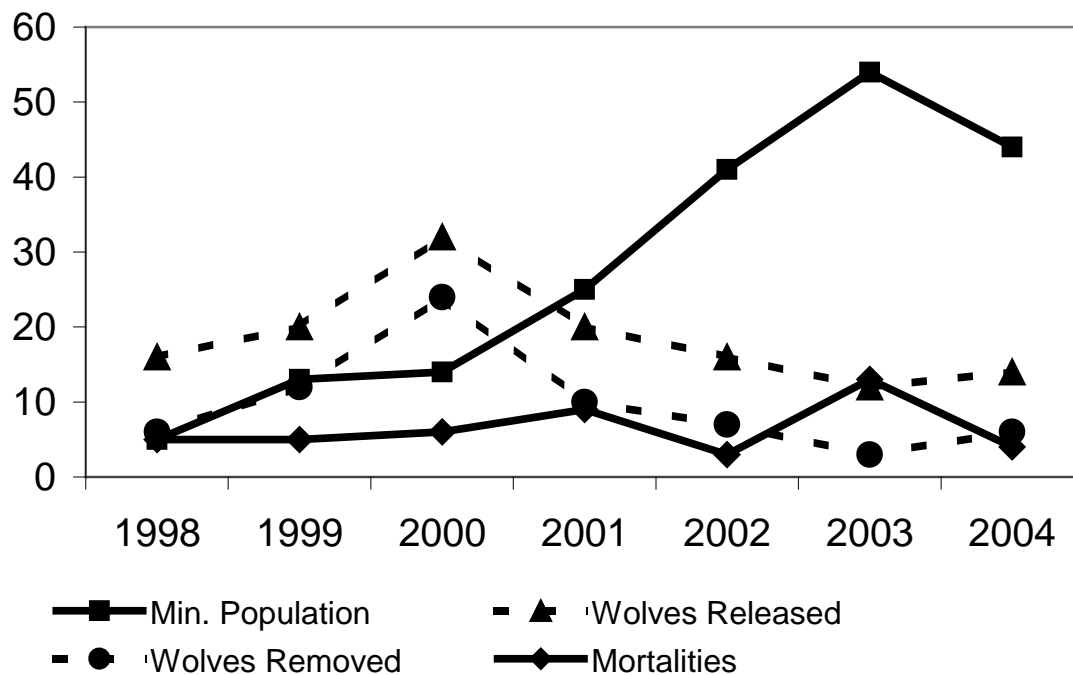


Figure 4. Mexican wolf population estimates and associated population parameters. Wolves' released includes: pack translocations (wolves re-released from captivity back into the wild) and initial direct releases (wolves with no wild experience).

2004 Mexican Wolf Home Ranges

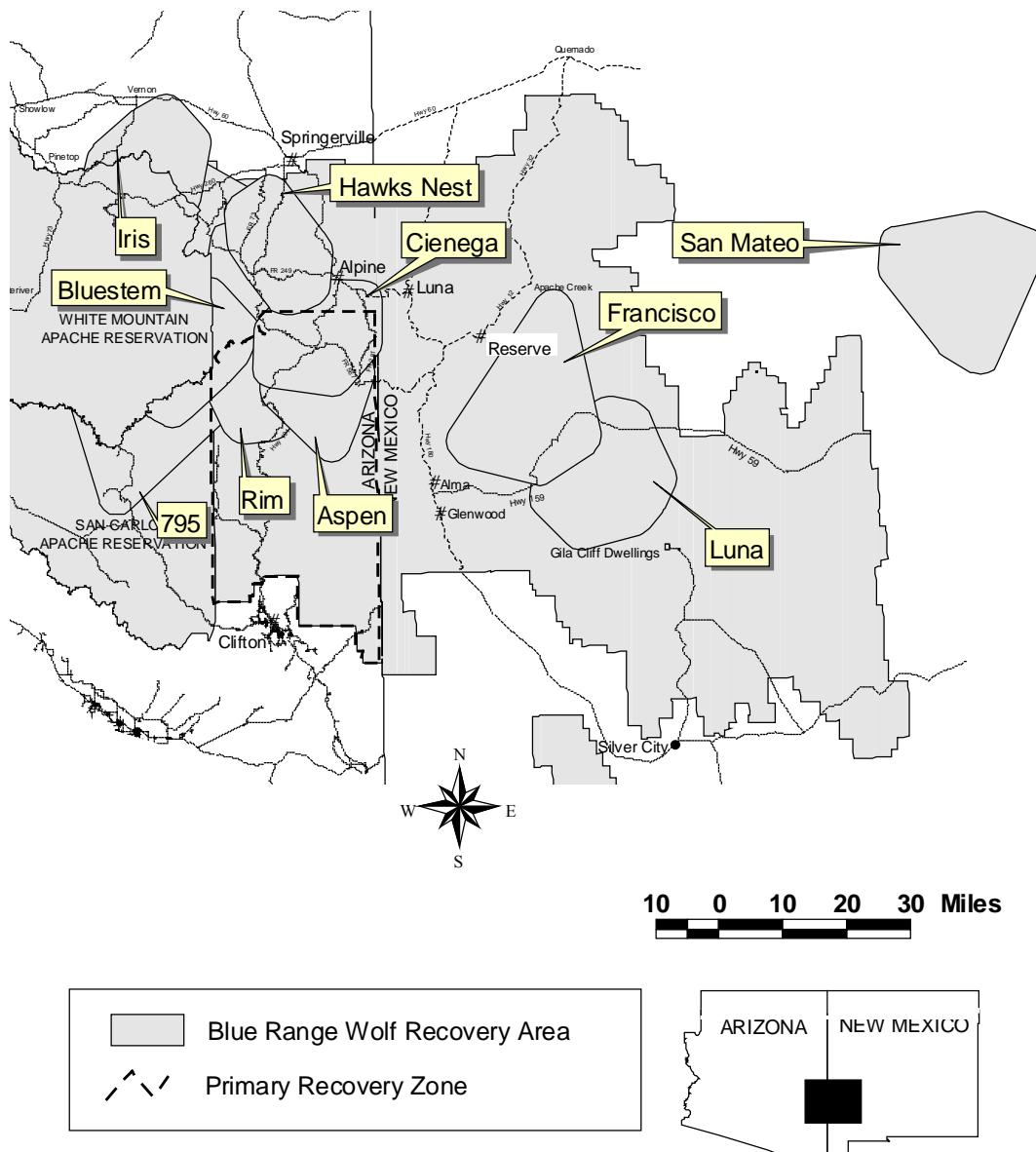


Figure 5. Mexican wolf home ranges in 2004 using 95% minimum convex polygon method with a 3-mile buffer.

2004 Mexican Wolf Occupied Range

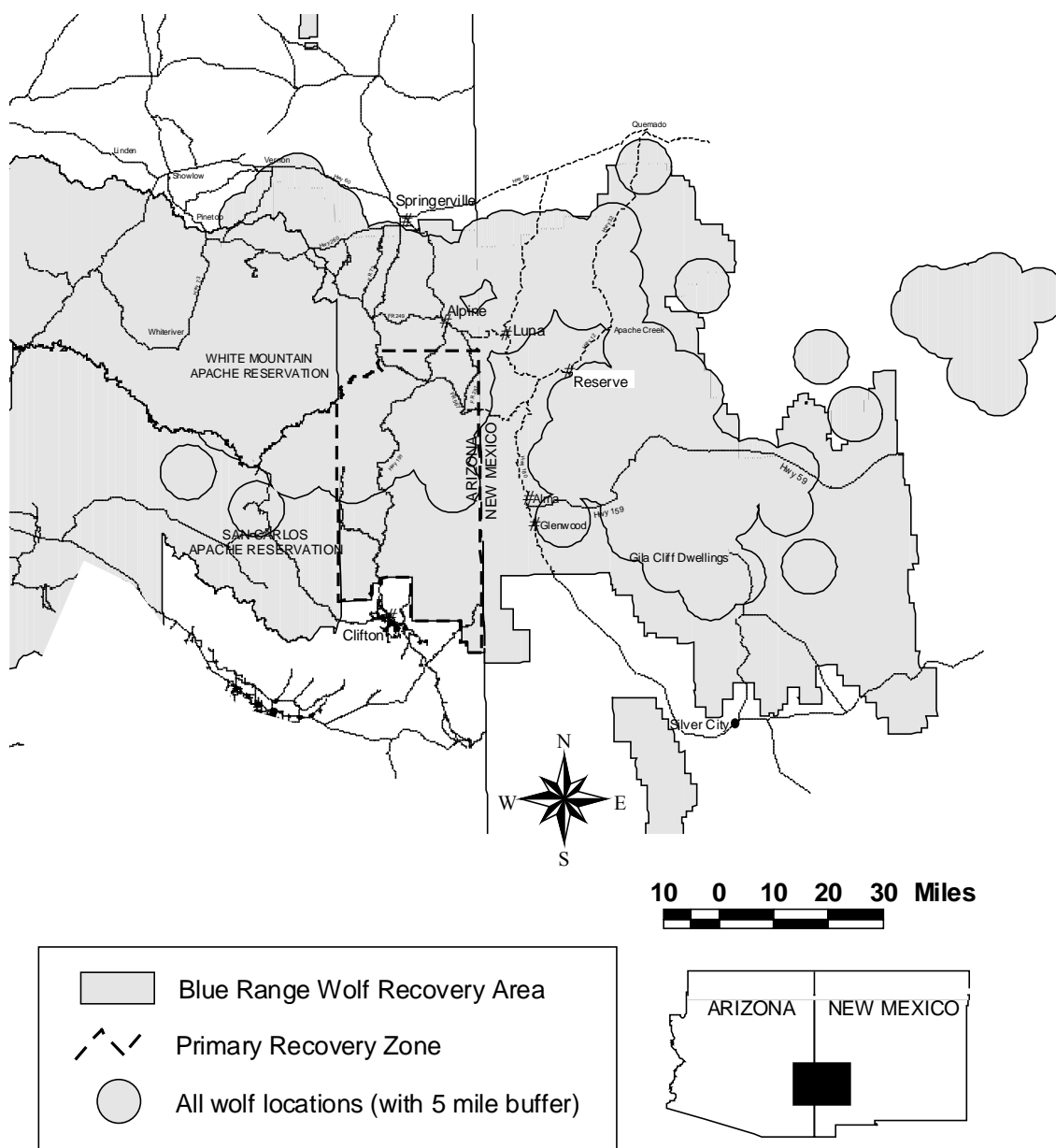


Figure 6. All Mexican wolf locations (aerial and ground) in 2004, with a 5-mile buffer added.

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APPENDIX A

2004 Pack Summaries

Bluestem Pack (AM507, AF521)

The Bluestem Pack consisted of 7 individuals during January 2004. During August 2004, the Bluestem Pack was estimated at 9 individuals including AF521, AM507, 2 uncollared wolves and 5 pups of the year. During December 2004, 6 individuals could be confirmed including AM507, AF521 and 4 uncollared individuals. Attempts were made in 2004 to collar additional members of the Bluestem Pack; however, these attempts were unsuccessful. The year began and ended with functional collars on the alpha pair AM507 and AF521. Throughout the year the Bluestem Pack remained in their traditional home range along the Black River near the boundary of the FAIR and A-SNF. No mortalities, depredations, captures, translocations, or removals involving the Bluestem Pack occurred in 2004.

Cienega Pack (AF487)

From January through July 2004, AF487 was observed traveling with an unknown uncollared individual. During August, the Cienega Pack consisted of at least 6 individuals including AF487 along with 2 uncollared wolves and at least 3 pups of the year. As of December 2004, Cienega Pack was believed to consist of AF487 and at least 4 uncollared wolves. Throughout the year the Cienega Pack remained in their traditional home range in the A-SNF primarily utilizing areas in and around the Campbell Blue drainage. The only collared individual associated with the Cienega Pack during 2004 was AF487. No confirmed mortalities, depredations, captures, translocations, or removals involving the Cienega Pack occurred in 2004.

Hawks Nest Pack (AM619, AF487)

At the beginning of 2004, the only confirmed members of the Hawks Nest Pack were the collared alphas AF487 and AM619. During June, the 8,000 acre Three Forks fire burned through a portion of the Hawks Nest home range. The wolves remained outside of the fire perimeter during the active burn phase of the fire. A minimum of 2 pups were documented during August. Contact with AF487 was maintained through year's end. However, telemetry contact was lost with AM619 after October 4, 2004. Throughout the year the Hawks Nest Pack remained in their traditional home range in the northern portion of the A-SNF primarily utilizing areas from Nutrioso to Big Lake and north toward Mexican Hay Lake. There were no confirmed mortalities (AM619 status unknown), depredations, captures, translocations, or removals associated with the Hawks Nest Pack during 2004.

Bonito Creek Pack (M794, AF587)

At the beginning of 2004, the Bonito Creek Pack consisted of the collared wolves M794 and AF587. On January 16, 2004, AF587 was found dead on the FAIR in Arizona. Cause of death

was later attributed to other predators. M794 was then located alone through May 2004. The last contact with M794 occurred on May 3, 2004 near Willow Trap Tank on the FAIR. M794 was never contacted again despite intensive search flights throughout Arizona and New Mexico. With the mortality of AF587 and the "Fate Unknown" status of M794, the Bonito Creek Pack is now considered defunct. No depredations, captures, translocations, or removals involving the Bonito Pack occurred in 2004.

Hon-Dah Pack (AM578)

At the beginning of 2004, the Hon-Dah Pack had just lost its alpha female (AF637 was killed on December 24, 2003). On May 19, 2004 Hon-Dah yearling M823 was found dead on Highway 60, northwest of Springerville. M823 was released as a pup during 2003 and had apparently dispersed from the pack. The Veterinary Medical Examination Report documented that the wolf died of injuries typical of vehicular trauma. The home range of the Hon-Dah Pack was located entirely on the FAIR. As of December 2004, the Hon-Dah Pack consisted of AM578 and 2 unknown uncollared individuals. No confirmed reproduction, depredations, captures, translocations, or removals involving the Hon-Dah Pack occurred in 2004.

Rim (AF858)

The Rim Pack formed during 2004 from the pairing of F858 (wild born Cienega female) and an unknown wild born male. During January, F858 was located on the A-SNF portion of the Saddle Pack's traditional pre-removal home range (see below) and was also observed traveling with an unknown un-collared wolf in the Cienega Pack territory. During mid-summer, Rim Pack activity localized south of the Cienega Pack territory between the Campbell Blue drainage and Reno Peak. Rim Pack was confirmed to have produced at least 2 pups during 2004 with an estimated pack size at year's end of 4 (AF858 and 3 uncollared wolves). No mortalities, depredations, captures, translocations, or removals involving the Rim Pack occurred in 2004.

Aspen (AM512, AF667, and pups m871, f872, and f873)

AF667 and AM512 bred in captivity during 2004 giving birth to three pups on April 15 at the Ladder Ranch Wolf Management Facility. On July 28, 2004, AF667, AM512, and pups m871, f872, and f873 were released from a mesh acclimation pen southeast of Hannagan Meadow in the Blue Range Primitive Area. Within a month after release, AF667, AM512, and fp872 began utilizing the west side of the Blue River drainage between the Red Hills road and KP Creek. On September 13, 2004, mp871 slipped its radio-collar, which was later found near the release site in the vicinity of Hannagan Meadow. Female pup 873 became functionally independent from the alphas by October, or 3 months post-release, establishing a pattern of use in the Rose Peak area. During this time it was not known whether the missing mp871, if alive, was traveling with the alphas and fp872, was with its littermate fp873, or was independent itself. On September 12, 2004 a report was received from a resident on the Blue River corridor of two wolves harassing a calf in a corral. Project personnel investigated and determined that AF667 and AM512, of the Aspen Pack, were in the area. Project personnel began intensive monitoring of the Aspen Pack that was to last through the end of the year. On the evening of October 28, the Aspen Pack likely

interacted with a dog in the vicinity of a residence on the Blue River corridor, resulting in superficial injuries. On the evening of November 4, Aspen Pack members AM512 and fp872 were involved in a non-injurious interaction with two domestic dogs enclosed in a chain link fence along the Blue River corridor. The resident fired a gun into the air after which the wolves left the area. On the evening of November 30, a Blue River resident reported another non-injurious incident involving a wolf and dogs at their residence. While the wolf involved could not be determined, Aspen Pack AM512, AF667, and fp872 were known to have been in the area. From October through the end of the year, Aspen f873 continued to be located separate from the rest of the pack in the vicinity south of the Blue Lookout area and west of Rose Peak. It was suspected that an uncollared individual seen with fp873 on December 5, 2004 was mp871; however, this could not be confirmed. The Aspen Pack's persistent use of the Blue River corridor from October through December resulted in the initiation of trapping on December 9, 2004. On December 22, 2004, fp872 was captured at the mouth of Saddle Canyon and transferred to the Ladder Ranch Wolf Management Facility in New Mexico. This 8-month-old pup was in good physical condition weighing 60 pounds at the time of capture. Despite the use of the Blue River drainage and documented interactions, there were no confirmed livestock injuries or depredations associated with the Aspen Pack during 2004.

Iris (AM798)

Throughout 2004, AM798 was documented traveling with an unknown uncollared wolf. The Iris Pack's home range consisted of the northern portion of the A-SNF between Highways 260 and 60 with occasional forays to the southwest onto the FAIR. During August, sighting reports and track observations indicated the Iris Pack might have included the alpha pair and at least 1 pup of the year. However, subsequent confirmation of any pups associated with the Iris Pack did not occur and any pups that may have been present are not thought to have survived. No depredations, captures, translocations, or removals involving the Iris Pack occurred in 2004.

San Mateo (AM796, AF903)

During January 2004, M796 was located in the vicinity of the San Mateo Mountains on the Cibola National Forest. During April, project personnel observed M796 with an uncollared pregnant wolf (later assigned # AF903) outside of the recovery area in the San Mateo Mountains. On May 1, 2004 USDA-WS personnel investigated a depredated newborn calf carcass near the San Mateo Mountains. The kill was determined to be a confirmed wolf depredation by M796 and the uncollared female AF903. Genetic testing of the AF903 identified her as possible offspring of the Gapiwi Pair; however, final test results are still pending. The pair was monitored extensively throughout the summer in an attempt to confirm the presence of a pup(s), however no confirmation was obtained. In August, the pair was captured for being outside the recovery area and transferred to captivity. The pair was subsequently translocated to the GNF and on September 30, 2004, AM796 and AF903 self-released from a soft mesh pen located at McKenna Park in the Gila Wilderness. After approximately 20 days, the pair returned to the San Mateo Mountains, however, contact with AM796 was lost in early December when the newly affixed GPS collar prematurely dropped off.

Gapiwi (AF624)

In January 2004, AF624 began wide ranging movements and was located and observed on several occasions outside her normal territory (T-Bar Grassland – Canyon Creek Mountain area) north of Reserve, NM. AF624 moved back to the east side of the Canyon Creek Mountains and was last located near AM832 on February 6, 2004, however, subsequent monitoring flights failed to locate her. At year's end the status of AF624 and therefore the Gapiwi Pack was considered "Status Known". No depredations, captures, translocations, or removals involving the Gapiwi Pack occurred in 2004.

Luna (AM583, AF562)

The Luna Pack appeared to take over portions of the Gapiwi Pack territory after the loss of the Gapiwi male and break up of the pack. The pair was confirmed to have denned with reports indicating the pair had at least two pups in October. However, by mid-December tracks and sightings confirmed the presence of only the adult pair. No reproduction, confirmed mortalities, depredations, captures, translocations, or removals involving the Luna Pack occurred in 2004.

Francisco II (AM904, AF511, and mp919)

AF511 and an uncollared male established a territory in the Bear Wallow Mountain area during the fall 2003 and winter 2004. AF511 successfully denned and two pups were consistently observed with her and the uncollared male later assigned # as AM904. On October 20, 2004 trapping efforts resulted in the capture and radio-collaring of the adult male (AM904) and a male pup (mp919). Genetic testing revealed that AM904 was the offspring of the Luna Pair and mp919 was the offspring of AF511 and AM904. Contact with AM904 was lost in late December when a newly affixed GPS collar prematurely dropped off. No mortalities, depredations, translocations, or removals involving the Francisco Pack occurred in 2004.

AM729 and AF799

AF799 (formerly Francisco Pack) and AM729 (formerly Saddle Pack) bonded in summer/fall 2003 and established a territory in the GNF near Collins Park. On March 9, 2004 USDA-WS personnel investigated a report from project personnel of a dead newborn calf in New Mexico. It was determined to be a confirmed depredation involving AF799 and AM729. Intensive monitoring and hazing occurred in an attempt to prevent additional depredations. Despite hazing efforts, on March 18, USDA-WS personnel investigated a report from a rancher in New Mexico of another dead newborn calf that wolves were seen feeding on. This was also determined to be a confirmed depredation involving AF799 and AM729. In response to the 2 confirmed depredations, USDA-WS initiated trapping for AF799 and AM729. On March 22, AM729 was captured and taken to Sevilleta. On April 18, AF799 was captured near Collins Park. An examination of AM729 revealed a large infected abscess on his neck. Due to the extent of the infection, AM729 underwent surgery where wood splinters were discovered. No additional depredations were confirmed after the capture of AM729. AF799 was in the late stages of pregnancy upon capture and was re-united in captivity with AM729. The pair was slated to be

translocated pending the birth of pups. However, despite successfully whelping 6 pups in captivity, none survived. At year's end both F799 and M729 remained in captivity.

Saddle (AF797, AM574, AM732, mp860, fp861, fp862, mp863, and mp864)

At the beginning of 2004, the Saddle Pack consisted of AM574 and new mate AF797, formerly of the Francisco Pack. AF797 was first documented with AM574 in October 2003 after the death of the previous alpha female AF510. On March 18 and March 20, USDA-WS investigated the carcasses of two newborn calves on the SCAR. Both kills were determined to be confirmed depredations involving the Saddle Pack. Because of the two depredations as well as the pack's use of the SCAR during February and March, project personnel began trapping efforts on March 18, 2004. On March 23, USDA-WS investigated the carcass of an older calf on the SCAR and it was also determined to be a confirmed depredation. A visibly pregnant AF797 was captured on March 24, 2004 and transported to the Sevilleta Wolf Management Facility. On March 26, project personnel observed a severely injured calf on the SCAR. The calf died the next day and it was determined to be a fourth depredation. On April 15, USDA-WS personnel investigated a fifth calf carcass on the SCAR and determined it to be a confirmed depredation by Saddle Pack AM574 and/or associates. As a result of these depredations and the ineffectiveness of non-lethal methods of control, a lethal take order for AM574 was issued. On April 5, 2004 AF797 whelped 5 pups in captivity. AM732 was placed in the pen with AF797 and the pups as a surrogate father. AM732 readily adopted the pups. On July 11, 2004 project personnel, as required by the lethal take order, shot AM574. On August 17, AF797 (former mate of Saddle AM574), surrogate mate AM732 (formerly of the Red Rock Pack), and pups m860, f861, f862, m863, and m864 sired by AM574 were packed into the Gila Wilderness on mules and put into a mesh acclimation pen at McKenna Park. The Saddle Pack self-released the same day. The pack subsequently moved to the Miller Springs area until November when they moved north across the West Fork of the Gila River. Unfortunately, contact with AM732 was lost in November when a newly affixed collar prematurely dropped off.

On November 7, 2004 a New Mexico outfitter reported that while he was pursuing a bear in the Gila Wilderness Area with hounds, his dogs encountered and fought with three wolves. The wolves, determined by the Interagency Field Team (IFT) to be members of the Saddle Pack, left the area when the guide fired his gun into the air. Two of the dogs were severely injured and required veterinary care, while the other two dogs sustained minor injuries. Both dogs injured during the encounter survived, as their injuries were non-life threatening. A claim was submitted to DOW for reimbursement of veterinary care expenses associated with this incident, which is still pending.

Individual Wolf Summaries

M832

During early 2004, M832 moved from Arizona to New Mexico near Beaverhead and was located with F800 prior to her death. On February 6, M832 was located with Gapiwi AF624, which was the last known location for AF624. M832 was then observed traveling with an uncollared wolf during March and April with the last documented location for M832 occurring on April 19, 2004. Subsequent search flights conducted throughout Arizona and New Mexico failed to locate M832. Therefore, the status of M832 is now considered "Fate Unknown". No depredations, translocations, or removals involving M832 occurred in 2004.

M795

M795 began and ended 2004 as a lone wolf with no established pack affiliations. Throughout the year, M795 used portions of the SCAR, FAIR, and nearby Bear Wallow Wilderness in the A-SNF. No depredations, captures, translocations, or removals involving M795 occurred in 2004.

M859

M859 was captured on SCAR as an uncollared wolf on November 21, 2003. During January 2004, M859 was located in Hawks Nest territory and observed interacting with the Hawks Nest pair. M859 traveled extensively ranging from the eastern boundary of FAIR to the GNF south of Quemado, NM. On February 5, M859 was hazed from the residential area of Nutrioso. On February 10, 2004, USDA-WS personnel investigated a report of a wolf incident with a dog near Nutrioso, AZ. It was determined that it was probable that the dog was bitten by M859 as he was in the area and the bites were consistent with a wolf. On February 17, project personnel observed M859 with 2 uncollared wolves in the vicinity of Escudilla Mountain. On August 12, a motorist reported accidentally hitting M859 just north of Alpine after which M859 remained in the vicinity for several days before moving from the area. In late December 2004, M859 began significant movements to the east into New Mexico with locations near the northeastern boundary of the GNF by year's end. No captures, translocations, or removals involving the M859 occurred in 2004.

F800

On January 22, 2004 F800 was found dead near Beaverhead, New Mexico. Cause of death was determined to be illegal shooting.

APPENDIX B

Personnel

The following personnel were involved in the project during this reporting period. Individuals listed below collected data or provided other information for this report.

U.S. Fish and Wildlife Service

John Morgart, Mexican Wolf Recovery Coordinator (started November 2004)
Colleen Buchanan, Assistant Mexican Wolf Recovery Coordinator
John Oakleaf, Mexican Wolf Field Projects Coordinator
Dan Stark, Wolf Biologist
Maggie Dwire, Mexican Wolf Biologist
Jim Ashburner, Special Agent (started May 2004)

Arizona Game and Fish Department

Dan Groebner, Region I Nongame Specialist and AGFD Wolf Project Leader
Paul Overy, Field Team Leader (left September 2004)
Shawn Farry, Field Team Leader (started October 2004)
Rich Bard, Wolf Technician (left May 2004)
Shawna Nelson, Wolf Technician

New Mexico Department of Game and Fish

Nick Smith, Wolf Biologist

USDA-APHIS Wildlife Services

J. Brad Miller, Wolf Management Specialist
Richard Grabbe, Wolf Management Specialist (started February 2004)
Andrea Bristol (Depredation Study) (left April 2004)
Janet Reed (Depredation Study) (left September 2004)

Turner Endangered Species Fund

Melissa Woolf, Mexican Wolf Biologist

White Mountain Apache Tribe

Krista Beazley, Tribal Mexican Wolf Biologist
Deon Hinton, Wolf Technician

Texas Tech. University

Janet Reed, Masters Student (Dietary Study) (left February 2004)

Volunteers

Colby Gardner	Jesse Lewis	Janet Reed	Helen Trotman
Valerie Mitchell	Laura Kelly	Luis Gonzalez	Cassie Hallmark

Defenders of Wildlife

Nahum Sanchez, Intern from Mexico

Luis Gonzalez, Intern from Mexico